

## AN APPROACH TO SPECIALIZING.

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After a person has collected generally in entomology and has acquired some familiarity with the various orders, he usually decides to continue in that order which has had a particular attraction for him. This in itself is usually a large field. Presently he accumulates an unwieldy mass of material, regarding which he has only a superficial knowledge. Looking ahead, he sees that further activity on his part will aggravate this situation if he can devote only limited time and resources to its pursuit. The time has arrived when the possibilities of specializing should be examined.

Entomology has, of course, many aspects that lend themselves to special study, such as distribution, life histories and migration, for example. Below is suggested an approach to the study of all aspects of a limited group of Lepidoptera. This approach can readily be applied to other orders.

Selection of a group for study should be made only after careful consideration and consultation with men of broad experience, such as teachers of entomology and museum experts. There is probably no group in which valuable work cannot still be done, but some groups have been neglected and may offer greater opportunity for original work. However, the reasons why they have not been worked up may be significant and should be clearly understood and acceptable before going ahead. For practical reasons, the size of a group should be limited. One that is too large may become burdensome. If a small one is worked up, on the other hand, it is always possible to turn to another. About two hundred species, more or less, is suggested as a practical limit for intensive study.

One of a specialist's first requisites is ability to recognize his species and to know when and where they are to be found. To recognize them accurately with confidence, the original descriptions should be consulted. To be sure some of the older descriptions may merely say "a pretty little pink moth from North America", but generally speaking they tell what the author saw that was different from related species. Unfortunately these original descriptions are usually scattered through numerous journals which may not be available for purchase. They can, however, be copied in entomological libraries. At this point, the advantage of working with some two hundred instead of several thousand species becomes readily apparent. The specialist, by limiting the scope of his

studies, can do with facility essential jobs which become impractical to the average worker when attempted on a vast scale.

As a start, Dyar's Check List of N.A. Lepidoptera will supply references to the original descriptions. References to new descriptions since it was published in 1902 must be sought elsewhere. In addition to the description, it is essential to locate the type of each species. An inspection of the names of the authors listed after the species in McDunnough's Check List is often a clue to the collection in which the type was deposited. Ultimately, the specialist will want to have in his study collection a specimen compared with the type of each species. Insofar as possible he should make this comparison himself as a matter of education. When types are domiciled abroad or in distant collections, he may have to be content with a good photograph, if available, or comparison with a specimen that has been compared with the type, which is not too satisfactory.

For successful collecting and field study, data are required on when and where the insects fly. This involves visiting collections having a substantial representation in the group and taking off the records from the labels. Valuable information on the distribution and season of flight recorded over many years may be readily obtained in this way with a little effort. In some museum collections may also be recorded the domicile of the type and the reference to the original description. Because of the great importance of museums as depositories of types and sources of data and study material, it seems appropriate that specialists help fill in the gaps in museum collections, from time to time, as they accumulate material for study. Museum collections are usually available to anyone seriously interested and the curators are more than willing to assist with advice and suggestions. It is well to remember that they are also busy men who cannot be expected to do a specialist's research for him.

When the specialist has assembled the information tools referred to above, he is prepared to face his fundamental problem—the insects. After all, they are what he set out to study, although sometimes students seem reluctant to graduate from the literature to the insects themselves. The literature is only a tool, although an important one. Presumably it is incomplete because the group would not be selected for study if the last word had been spoken. In some particulars, the literature may not always be entirely accurate, for a variety of reasons. In any case it affords a base from which to start.

Considerable material for study may be acquired in the usual way, by purchase, exchange or loan. A substantial amount of it should be obtained at first hand in the field. This is the only way to build up accurate knowledge of habitat, food plant, and the many special characteristics that the general collector does not have the time or the interest to record. Field collecting also is often the only way the specialist can obtain the extended series of specimens he requires for many of his studies, after he has discovered that a few specimens showing variation do not necessarily constitute a new species. While it is interesting to discover new species, the really important job is to learn something new about species, many of which have been represented, for generations, by names in the check list and little else. How well this can be done is admirably demonstrated by the work of such specialists as Henry Bird in the *Papaipema* and Dr. Frank Morton Jones in the *Psychidae*.

Specializing offers to collectors an opportunity for rewarding study and constructive accomplishment within the limits of time and resources available. It would be a fine thing if more of them would try it.

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